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STEPHEN C. GLAZIER KIRKPATRICK & LOCKHART NICHOLSON GRAHAN LLP 1601 K STREET, NW WASHINGTON, DC 20006			GORTAYO, DANGELINO N	
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			2168	

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Please find below and/or attached an Office communication concerning this application or proceeding.

6

Office Action Summary	Application No. 10/713,650	Applicant(s) MCGROGAN, STEPHEN K.	
	Examiner Dangelino N. Gortayo	Art Unit 2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>5/13/2004</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-36 are pending.
2. The updated drawings filed 1/29/2004 have been accepted for examination

Information Disclosure Statement

3. An initialed and dated copy of Applicant's IDS form 1449, filed 5/13/2004, is attached to the instant Office action.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 35-36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 35 recite the limitation "machine-readable medium", which is defined in the specification as being able to be defined as a carrier wave modulated, or otherwise manipulated, to convey instructions. This definition renders the claims non-statutory, with the claims not limited to embodiments which fall within a statutory category. Dependent claim 36 recites the limitation "computer-readable medium", and suffers from the same non-statutory limitation as claim 35. Proper correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 30 recites the limitation “the method” in line 3. There is insufficient antecedent basis for this limitation in the claim. The claim is directed to a system for an application program to manage memory. The limitation “the method” lacks antecedent basis and is not mentioned previously in the claim. Proper correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 3-15, 18-28, 30, 32-33, and 35-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Baulier et al. (“Baulier” US Patent 6,496,831 B1)

As per claim 3, Baulier teaches “A method for an application program to manage memory associated with an object-oriented database (OODB) accessed by the

application program, the application program associated with an operating system,”
(see Abstract)

“(a) connecting to a data repository of the database, the data repository including a plurality of memory-mapped file segments stored on at least one nonvolatile memory medium;” (column 5 lines 18-30, wherein a client connects to a Real-time Analysis Engine (RAE) with persistent memory stores)

“(b) registering a fault handler with the operating system, the fault handler associated with the data repository;” (columns 25 lines 31-44, wherein fault recovery is used in the SAE to handle faults)

“(c) catching, by the fault handler, a segmentation fault issued for an object referenced by the application program and resident in the data repository, the segmentation fault issued at an interrupt location in the application program;” (column 25 lines 36-44, wherein the fault tolerance and recovery process catches a faulty call)

“(d) finding a file segment of the data repository that corresponds to the referenced object;” (column 26 lines 44-53, wherein the reference from the fault calls an object in the data collection)

“(e) mapping the found file segment into a main memory;” (column 26 lines 42-43, wherein the inputs from the fault tolerance and recovery process are mapped)

“and (f) restarting the application program at the interrupt location.” (column 26 lines 7-12, wherein system establishes recovery points to roll back from a period before the fault occurs)

As per claim 4, Baulier teaches “unmapping a second file segment from the main memory before mapping the found file segment.” (column 26 lines 56-58, wherein the store is rolled back to the last recovery point, meaning all prior changes are unmapped after that point)

As per claim 5, Baulier teaches “file segments are unmapped according to a least-recently-used (LRU) criterion.” (column 27 lines 55-63, wherein the recovery points are in order, with the least recent recovery points not saved)

As per claim 6, Baulier teaches “the data in the data repository is not copied into the main memory from the data repository when needed by the application program and is instead directly accessed by the application program.” (column 7 line 62 – column 8 line 18, wherein the data is directly accessed from the data stores of the RAE when an event happens).

As per claim 7, Baulier teaches “the nonvolatile memory medium is a disk.” (column 3 lines 32-34, wherein the data store is part of a disk-resident database system)

As per claim 8, Baulier teaches “objects in the data repository are directly interconnected by memory pointers.” (column 28 lines 38-44, wherein the objects in the memory store are mapped to a table, and is associated with the RAE)

As per claim 9, Baulier teaches “the objects comprise C++ objects.” (column 14 lines 54-60)

As per claim 10, Baulier teaches “a linkage in the interconnected objects includes at least one of an X node, a Y node, and a Z node.” (Figure 10A, wherein the objects are linked to types, keys, timestamp, and data store location)

As per claim 11, Baulier teaches “each object includes a virtual function pointer, the pointer pointing to a shared memory area holding virtual function tables associated with object types.” (Figure 9 and column 20 lines 3-13, wherein there is a shared memory space to access data hierarchies holding a subscription table with pointers)

As per claim 12, Baulier teaches “every object in a class of the data repository points to a same predetermined shared memory address when stored.” (column 6 lines 46-49, wherein the objects in the RAE point to the same address space)

As per claim 13, Baulier teaches “each object includes a pointer to itself.” (column 19 lines 6-11)

As per claim 14, Baulier teaches “each object in the data repository has an associated stored time stamp, the time stamp indicating at least one of a time when the object first appeared in the data repository and a time when the object became invalid.” (Figure 8B and column 18 lines 57-65)

As per claim 15, Baulier teaches “the time stamp is stored in a header of the object.” (Figure 8B and column 18 lines 57-65, wherein the timestamp is stored in the object entry of the table)

As per claim 18, Baulier teaches “(a) upon a request by the application program to store a new object in the database, creating a segment object in the data repository;” (column 11 lines 46-58, wherein the tables in the data store are updated with object

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information) “(b) associating a segment identifier with the new object, the segment identifier being one of a default segment identifier, a segment identifier specified by the new object, and a segment identifier specified by another object that owns the new object;” (column 12 lines 1-7, wherein an identifier is associated in the table for the objects) “(c) if a current segment file has sufficient memory for the new object, allocating memory to the new object from the current segment file;” (column 12 lines 1-7) “(d) if the current segment file has insufficient space for the new object, allocating memory to the new object by extending the current segment file or creating a new segment file;” (column 12 lines 25-34) “and (e) storing the new object in the allocated memory.” (column 11 lines 59-67, wherein the record is stored)

As per claims 19 and 20, Baulier teaches memory and segment size (column 4 lines 33-42, wherein the data store is made of memory with varying sizes)

As per claim 21, Baulier teaches “the data repository is connected to a NFS (Network File System) network.” (Figure 11, wherein the RAE data stores are connected to a network)

As per claim 22, Baulier teaches “multiple computers access the data repository via the NFS network.” (Figure 11 and column 4 lines 21-33)

As per claim 23, Baulier teaches “the data repository resides in multiple computers.” (Figure 11 references 104-k)

As per claim 24, Baulier teaches “the found file segment is stored in a segment library having a two-level directory structure.” (Figure 12, wherein the data entries are stored in a data store with tables and objects)

As per claim 25, Baulier teaches “a file name of the found file segment includes a hexadecimal digit sequence representative of a portion of a memory address of the found file segment.” (column 28 lines 25-31, wherein a serial number for the event is stored)

As per claim 26, Baulier teaches “a directory name of a directory containing the found file segment includes a hexadecimal digit sequence representative of a portion of a memory address of the found file segment” (column 28 lines 25-31, wherein the data store clusters are identified with serial numbers)

As per claim 27, Baulier teaches “checkpoints lock at least a portion of the data repository during a file system copy. (column 29 lines 22-30, wherein a recovery point is used to store state information before a change happens)

As per claim 28, Baulier teaches “at least one species of objects of the file segments is locked independently of another species of objects of the file segments.” (column 31 lines 24-45, wherein the object can be edited by multiple sites)

As per claim 30, Baulier teaches “A system for an application program to manage memory associated with an object-oriented database (OODB) accessed by the application program,” (see Abstract)

“(a) means for connecting to a data repository of the database, the data repository including a plurality of memory-mapped file segments stored on at least one nonvolatile memory medium;” (column 5 lines 18-30, wherein a client connects to a Real-time Analysis Engine (RAE) with persistent memory stores)

“(b) means for registering a fault handler with the operating system, the fault handler associated with the data repository;” (columns 25 lines 31-44, wherein fault recovery is used in the SAE to handle faults)

“(c) means for catching, by the fault handler, a segmentation fault issued for an object referenced by the application program and resident in the data repository, the segmentation fault issued at an interrupt location in the application program;” (column 25 lines 36-44, wherein the fault tolerance and recovery process catches a faulty call)

“(d) means for finding a file segment of the data repository that corresponds to the referenced object;” (column 26 lines 44-53, wherein the reference from the fault calls an object in the data collection)

“(e) means for mapping the found file segment into a main memory;” (column 26 lines 42-43, wherein the inputs from the fault tolerance and recovery process are mapped)

“and (f) means for restarting the application program at the interrupt location.” (column 26 lines 7-12, wherein system establishes recovery points to roll back from a period before the fault occurs)

As per claim 32, Baulier teaches “the data in the data repository is not copied into the main memory from the data repository when needed by the application program and is instead directly accessed by the application program.” (column 7 line 62 – column 8 line 18, wherein the data is directly accessed from the data stores of the RAE when an event happens).

As per claim 33, Baulier teaches "An object-oriented database (OODB)," (see Abstract)

"(a) a data repository including a plurality of memory-mapped file segments stored on at least one nonvolatile memory medium;" (column 5 lines 18-30, wherein a client connects to a Real-time Analysis Engine (RAE) with persistent memory stores)

"(b) the file segments including objects directly interconnected by memory pointers;" (column 28 lines 38-44, wherein the objects in the memory store are mapped to a table, and is associated with the RAE)

"(c) each object having an associated stored time stamp, the time stamp indicating at least one of a time when the object first appeared in the data repository and a time when the object became invalid;" (Figure 8B and column 18 lines 57-65)

"and (d) the data in the data repository not being copied into a main memory of a computer accessing the data," (column 5 lines 54-63, wherein the system works like the data stores in the RAE is treated like main memory, and the main memory is not used much, and is equivalent) "wherein the data repository has an associated fault handler, the fault handler registered by an application program with an operating system associated with the application program," (columns 25 lines 31-44, wherein fault recovery is used in the SAE to handle faults) "wherein the fault handler is configured to catch a segmentation fault issued for an object referenced by the application program and resident in the data repository, the segmentation fault issued at an interrupt location in the application program," (column 25 lines 36-44, wherein the fault tolerance and recovery process catches a faulty call) "wherein a file segment of the data repository

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that corresponds to the referenced object is mapped into the main memory,” (column 26 lines 42-43, wherein the inputs from the fault tolerance and recovery process are mapped) “and wherein the application program is restarted at the interrupt location.” (column 26 lines 7-12, wherein system establishes recovery points to roll back from a period before the fault occurs)

As per claim 35, Baulier teaches “(a) connecting to a data repository of an object-oriented database (OODB) accessed by an application program, the application program associated with an operating system, the data repository including a plurality of memory-mapped file segments stored on at least one nonvolatile memory medium;” (column 5 lines 18-30, wherein a client connects to a Real-time Analysis Engine (RAE) with persistent memory stores)

“(b) registering a fault handler with the operating system, the fault handler associated with the data repository;” (columns 25 lines 31-44, wherein fault recovery is used in the SAE to handle faults)

“(c) catching, by the fault handler, a segmentation fault issued for an object referenced by the application program and resident in the data repository, the segmentation fault issued at an interrupt location in the application program;” (column 25 lines 36-44, wherein the fault tolerance and recovery process catches a faulty call)

“(d) finding a file segment of the data repository that corresponds to the referenced object;” (column 26 lines 44-53, wherein the reference from the fault calls an object in the data collection)

“(e) mapping the found file segment into a main memory;” (column 26 lines 42-43, wherein the inputs from the fault tolerance and recovery process are mapped)

“and (f) restarting the application program at the interrupt location.” (column 26 lines 7-12, wherein system establishes recovery points to roll back from a period before the fault occurs)

As per claim 36, Baulier teaches “each object in the data repository has an associated stored time stamp, the time stamp indicating at least one of a time when the object first appeared in the data repository and a time when the object became invalid.” (Figure 8B and column 18 lines 57-65)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 16-17, 29, 31, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baulier et al. (“Baulier” US Patent 6,496,831 B1) in view of Horan et al. (“Horan” US Publication 2003/0225662 A1)

As per claim 1, Baulier teaches “A method for an application program to access an object-oriented database (OODB),” (see Abstract)

“(a) connecting to a data repository of the database, the data repository including a plurality of memory-mapped file segments stored on at least one nonvolatile memory medium,” (column 5 lines 18-30, wherein a client connects to a Real-time Analysis Engine (RAE) with persistent memory stores) “the file segments including objects directly interconnected by memory pointers,” (column 18 lines 20-39, wherein the data stores store objects connected through a table) “wherein each object has an associated stored time stamp, the time stamp indicating at least one of a time when the object first appeared in the data repository and a time when the object became invalid,” (Figure 8B and column 18 lines 57-65) “wherein the data in the data repository is not copied into main memory from the data repository when needed by the application program,” (column 5 lines 54-63, wherein the system works like the data stores in the RAE is treated like main memory, and the main memory is not used much, and is equivalent)

“(b) registering a fault handler with the operating system, the fault handler associated with the data repository;” (columns 25 lines 31-44, wherein fault recovery is used in the SAE to handle faults)

“(c) catching, by the fault handler, a segmentation fault issued for an object referenced by the application program and resident in the data repository, the segmentation fault issued at an interrupt location in the application program;” (column 25 lines 36-44, wherein the fault tolerance and recovery process catches a faulty call)

“(d) finding a file segment of the data repository that corresponds to the referenced object” (column 26 lines 44-53, wherein the reference from the fault calls an object in the data collection)

“(e) mapping the found file segment into main memory;” (column 26 lines 42-43, wherein the inputs from the fault tolerance and recovery process are mapped)

“and (f) restarting the application program at the interrupt location.” (column 26 lines 7-12, wherein system establishes recovery points to roll back from a period before the fault occurs)

Baulier does not teach “and wherein the database is one of a portfolio management database and a TOMS database;”. Horan teaches “and wherein the database is one of a portfolio management database and a TOMS database;” (block 0025, wherein an object oriented database system for mapping asset data and responding to user queries handles trade orders). It would have been obvious at the time of the invention for one of ordinary skill in the art to combine Baulier’s method to access a data repository as main memory with Horan’s system of trade order database system. This gives the user the advantage of handling trades within an object oriented database with a unique way of accessing data stores. The motivation for doing so would be to reduce the cost of database services through a more efficient method of handling trades (see Block 0006 and 0008).

As per claim 2, Baulier teaches “the file segments include at least one portfolio segment and price segment.” (Figure 10B and column 22 line 58 – column 23 line 8, wherein a folder identification, type, and price rate are part of the records).

As per claim 16, Baulier is disclosed in claim 3 above. Baulier does not teach “the application program is a portfolio management application, and the database is a

portfolio management database." Horan teaches "the file segments include at least one portfolio segment and price segment" (block 0025, wherein an object oriented database system for mapping asset data and responding to user queries handles trade orders). It would have been obvious at the time of the invention for one of ordinary skill in the art to combine Baulier's method to access a data repository as main memory with Horan's system of trade order database system. This gives the user the advantage of handling trades within an object oriented database with a unique way of accessing data stores. The motivation for doing so would be to reduce the cost of database services through a more efficient method of handling trades (see Block 0006 and 0008).

As per claim 17, Baulier teaches "the file segments include at least one portfolio segment and price segment" (Figure 10B and column 22 line 58 – column 23 line 8, wherein a folder identification, type, and price rate are part of the records).

As per claim 29, Baulier is taught as per claim 3 above. Baulier does not teach "the application program and database are associated with a trade order management system (TOMS)". Horan teaches "the application program and database are associated with a trade order management system (TOMS)" (block 0025, wherein an object oriented database system for mapping asset data and responding to user queries handles trade orders). It would have been obvious at the time of the invention for one of ordinary skill in the art to combine Baulier's method to access a data repository as main memory with Horan's system of trade order database system. This gives the user the advantage of handling trades within an object oriented database with a unique way of

accessing data stores. The motivation for doing so would be to reduce the cost of database services through a more efficient method of handling trades (see Block 0006 and 0008).

As per claim 31, Baulier is taught as per claim 30 above. Baulier does not teach “the application program is a portfolio management application, and the database is a portfolio management database”. Horan teaches “the application program is a portfolio management application, and the database is a portfolio management database”. (block 0028, wherein the asset platform handles trade options and other investment options using data in a data store). It would have been obvious at the time of the invention for one of ordinary skill in the art to combine Baulier’s method to access a data repository as main memory with Horan’s asset management platform that handles investment options. This gives the user the advantage of handling investment options within an object oriented database with a unique way of accessing data stores. The motivation for doing so would be to reduce the cost of database services through a more efficient method of handling investment tasks (see Block 0006 and 0008).

As per claim 34, Baulier is taught as per claim 30 above. Baulier does not teach “the application program is a portfolio management application, and the data repository is a portfolio management data repository”. Horan teaches “the application program is a portfolio management application, and the data repository is a portfolio management data repository”. (block 0028, wherein the asset platform handles trade options and

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other investment options using data in a data store). It would have been obvious at the time of the invention for one of ordinary skill in the art to combine Baulier's method to access a data repository as main memory with Horan's asset management platform that handles investment options. This gives the user the advantage of handling investment options within an object oriented database with a unique way of accessing data stores. The motivation for doing so would be to reduce the cost of database services through a more efficient method of handling investment tasks (see Block 0006 and 0008).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Berkowitz et al. (US Patent 6,457,021 B1)

Hsiao et al. (US Patent 6,564,215 B1)

Narang et al. (US Patent 6,874,001 B2)

Tomori et al. (US Patent 6,865,658 B2)

Traversat et al. (US Patent 6,957,237 B1)

Chandrasekaran et al (US Patent 6,970,872 B1)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dangelino N. Gortayo whose telephone number is (571)272-7204. The examiner can normally be reached on M-F 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim T. Vo can be reached on (571)272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dangelino N. Gortayo
Examiner



Tim T. Vo
SPE